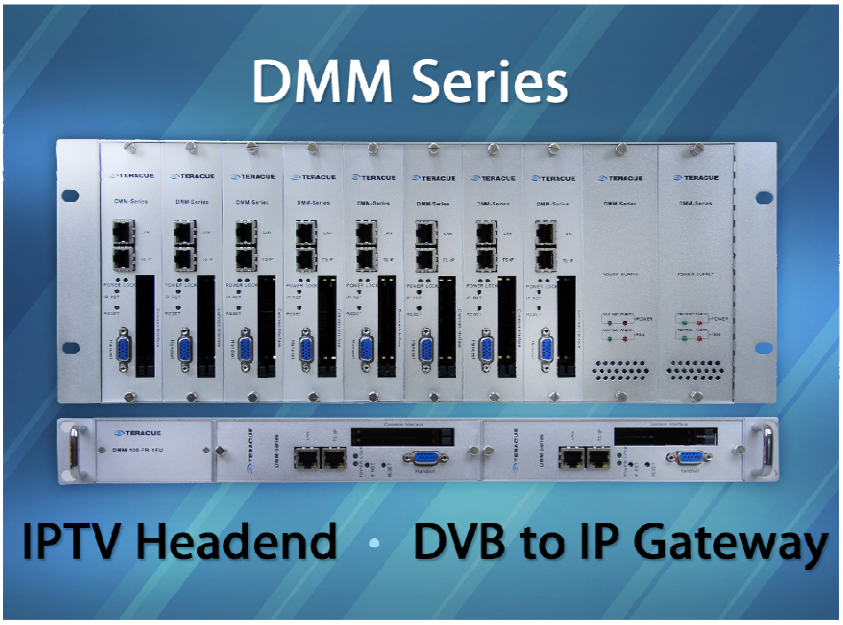
DMM-SERIES



User Guide V1.1

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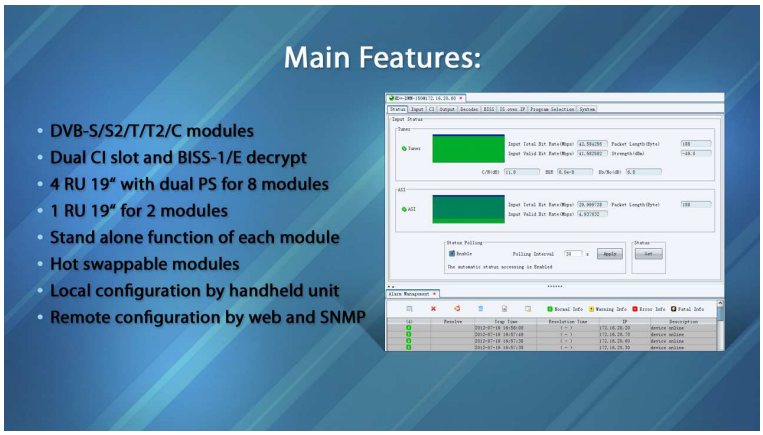
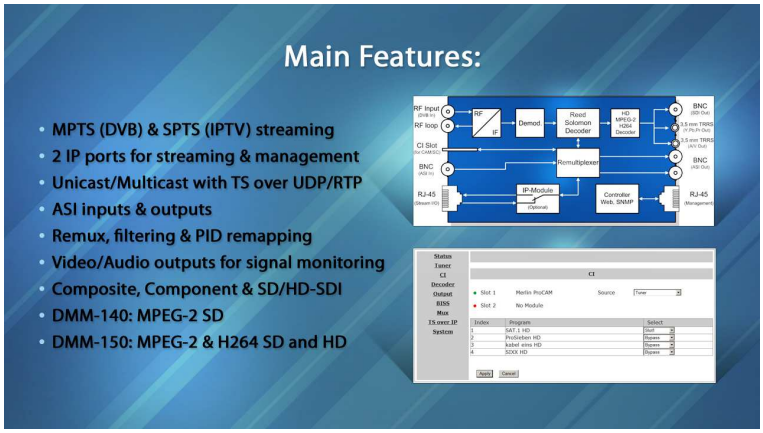
Applications:
IPTV/OTT streaming
DVB headend
DVB monitoring
Broadcast services
OB-Vans
Stadium & event TV
Control rooms
DVB-S
DVB-T
DVB-C
SetTopBox
IP NETWORK
PC
Video
VGA/DVI
VoD Server


Main Features:
DVB-S/S2/T/T2/C modules
Dual CI slot and BISS-1/E decrypt
4 RU 19" with dual PS for 8 modules
1 RU 19" for 2 modules
Stand alone function of each module
Hot swappable modules
Local configuration by handheld unit
Remote configuration by web and SNMP


Main Features:
MPTS (DVB) & SPTS (IPTV) streaming
2 IP ports for streaming & management
Unicast/Multicast with TS over UDP/RTP
ASI inputs & outputs
Remux, filtering & PID remapping
Video/Audio outputs for signal monitoring
Composite, Component & SD/HD-SDI
DMM-140: MPEG-2 SD
DMM-150: MPEG-2 & H264 SD and HD
RF Input
RF loop
CI Slot
BNC
RJ-45
RF
IF
Demod
Reed Solomon Decoder
Remultiplexer
IP-Module
Controller Web, SNMP
BNC
RJ-45

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If you find some points in this document unclear then please let us know, so we can improve this documentation.
Thank you! Mail to: documentation@teracue.com

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I. Information about the manual

This manual is designed to help administrators and users to install the DMM-Series on their computer.

If you received this publication as a PDF, then it's a good idea to print it out for future reference.

It is best to use this user guide directly in front of your computer, by doing so you try out everything at once.

.!. Important features are marked by this sign.

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1. Overview

1.1 Characteristics

DMM-Series is a compact modular digital TV head end that includes professional MPEG-2 and H.264 SD/HD IRD, MPEG-2 and H.264 SD/HD, Re-Multiplexer, QAM/COFDM Trans-Modulator, DVB Scrambler. Within 19" 4RU chassis, it provides 8 slots for any type of modules with redundant power supply. Also available 19" 1RU chassis for 2 slots with single power supply. With flexible solution and the high density, DMM-100 offers operators the advanced head end architectures in the marketplace for delivering analog and digital broadcast services to their subscribers. Coming with more new modules, DMM-100 is most suitable for future multiple network architectures: streaming and multiplexing of digital content over IP based networks and conversion of digital content for analog networks.

1.2 Main Feature

- DVB-S2/S, DVB-S, DVB-C, DVB-T2/T IRD modules with CI
- DVB-S/S2T/T2 to DVB-C QAM and DVB-T COFDM trans-modulator module
- 8 Way re-multiplexer module
- DVB Simulcrypt, BISS-1, BISS-E scrambler module
- Rich interface with ASI, IP, SDI, YPbPr, CVBS, XLR
- Web, SNMP Remote Control or handheld programmer unit local control
- 4RU 19" chassis compact modular design, supporting up to 8 modules with redundant power supply.
- 1RU 19" chassis compact modular design, supporting up to 2 modules with single power supply
- Functional module hot-swappable
- Intelligent cooling system
- Stand alone function of each module
- Cost-saving by backward compatible with new modules
- On site software update through IP

1.3 DMM-100 Main Chassis

- Standard 19" 4RU chassis with 8 slots for functional modules and 2 slots for power supplies
- Hot-swappable power supply unit
- Intelligent cooling system
- Wall mounted or Rack mounted
- Backward compatible with new modules
- Power Supply: AC 100V-260V, 50-60Hz
- Optional Build-in IP Switch
- 19" 1RU chassis with 2 slots and single power supply
- Dimension: L: 40,3 cm, W: 48,3 cm, H: 17,5 cm

1.4 DMM-100 CU Handheld Programmer Unit

- 2 x 20 LCD display screen and 6-key keypad
- No external power or battery needed
- Easy and quick on site system configuration without PC
- Backward compatible with new modules
- Dimension: L: 17,0 cm, W: 7,5 cm, H: 2,1 cm

1.5 DMM-140 Series

Professional MPEG-2 SD IRD and Processor Module

- Multiple inputs DVB-S2/S/C/T, TS/IP and ASI
- SD MPEG-2 MP@ML digital video decoding
- Flexible built-in re-multiplexing between ASI, Tuner and TS/IP Inputs
- 2x DVB-CI slots, multi programs, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- UDP, RTP Multicast / Unicast IP output, supports up to 32 independent channels
- PCM audio embedded in SDI output
- Remote control and supervision by SNMP, HTTP WEB and proprietary HDMS software
- RSSI, received Eb/No & BER monitoring
- On Site software update through IP

1.6 DMM-150 Series

Professional Multi-format HD/SD IRD and Processor Module

- Multiple inputs DVB-T2/S2/S/C/T/T2, TS/IP and ASI
- Redundant inputs between tuner, ASI and TS/IP
- SD/HD MPEG-2 and H.264 digital video decoding
- Digital audio decoding and loop through via SDI, HDMI and AES-EBU
- Multiple analog and digital outputs, ASI, CVBS, YPbPr, HDMI, SD/HD-SDI, TS/IP
- Flexible re-multiplexing between 2xASI, tuner and TS/IP Inputs
- 2x DVB-CI slots, multi programs, BISS 1 and BISS E decryption
- Dynamic PMT detection and automatic updating
- Support VBI TELETEXT, EBU/ DVB subtitle, closed caption
- UDP/RTP & Unicast/Multicast SPTS and MPTS over IP I/O
- Remote control and supervision by SNMP, HTTP WEB and proprietary HDMS software
- PCM audio embedded in SDI output or PCM audio over HDMI
- PCM output on two AES/EBU output ports
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring

2. Control with Display and Keypad

2.1 DMM-150 Series

Main-Menu	Sub-Menu	Description
Inputs	Status	ASI: Display ASI input status TUNER: Display tuner input status IP IN: Display IP input status
	DVB-S2	LNB Frequency: Input LNB frequency Satellite Frequency: Input downstream frequency of satellite Symbol Rate: Input symbol rate of satellite LNB Voltage: Off/13V/18 V LNB 22KHz: 22KHz or Off. DISQEC: Port A/Port B/Port C/Port D/DiSEQC OFF PLS Gold Code: 0~5000 Frequency Offset High: 5000KHz Frequency Offset Low: -5000KHz
	QAM	Constellation: 16/32/64/128/256QAM/64B/256B Frequency: Enter the frequency of the QAM signal in MHz. Symbol Rate: Edit the symbol rate to the proper value in kBaud.
	COFDM	Frequency: Input terrestrial frequency. Bandwidth: select bandwidth from 6MHz, 7 MHz and 8 MHz.
	RSSI	Tuner Status: Display tuner status Strength Display: Display the strength of tuner signal
	Ethernet	Stream IP Addr: 1.0.0.1~223.255.255.254 Stream Netmask: 1.0.0.1~223.255.255.254 and 0.0.0.0 Stream Gateway: 1.0.0.1~223.255.255.254 and 224.0.0.0~239.255.255.255 Stream Mac Address: Display MAC address Multicast IP Addr: Enter the IP address of the multicast stream for the transport stream over IP. Multicast UDP Port: Enter the UDP port number of the TS over IP stream. Protocol: UDP/RTP. Output Smoothing: ▪ Auto: the bit rate is variable. ▪ Disable: the unit let the TS pass by. ▪ Fixed Rate: the bit rate is fixed. ▪ TS Bit Rate: sets the bit rate of the TS which comes from the TS/IP input. The setting is only valid when the output smoothing is configured as Fixed Rate.

Main-Menu	Sub-Menu	Description
Outputs	BISS Menu	Biss Mode: Set Biss mode, can select 'OFF', 'Biss E' or 'Biss 1' Biss 1 Setup: Set Biss 1 (password is required) Biss E Setup: Set Biss E (ID number and password are required) Biss Source: Tuner/ASI Input
	CI	CI Source: MUX TS/Tuner/ASI Input Setup: Select TS CAM Name: Display CAM name of CI Slot1 and Slot2
	Decoder	Status: Show Status
		Source: CI De-encrypted/TUNER/ASI Input/Mux TS
		Program: Select programs.
		Video ▪ Video Standard: Select from Auto/1920x1080i 30/1920x1080i 29.97/1920x1080i 25/1280x720p 60/1280x720p 59.97/1280x720p 50/720x480p 59.94/720x480p 60/720x576p 50/720x576p 25/720x480i 29.97/720x576i 25 ▪ Screen: Select from Auto, 4:3 Full, 4:3 Letterbox, 16:9 Letterbox or 16:9 Full. ▪ DVB subtitle language: Choose DVB Subtitle language. ▪ EBU subtitle language: Choose EBU Subtitle language. ▪ Subtitle Priority: Select from DVB First or EBU First. ▪ Fail Mode: Select from Black Screen, No Sync and Still Picture. ▪ VBI Mode: Disable/Enable. VBI option only controls Closed – Caption over CVBS. To activate the CC over CVBS, enable the VBI option. ▪ Close Caption: Off/On. Controls both CC on CVBS and SDI. ▪ CVBS Sub PAL: select PAL mode, including PAL-B/D/G/H/I, PAL-N, PAL-N_C and SECAM. ▪ CVBS Sub NTSC: select NTSC Mode, including NTSC-M, NTSC-M_J, NTSC-M_443 and PAL-M. Note: the sub-menus VBI Mode, CVBS Sub PAL and CVBS Sub NTSC will only show up when the Closed Caption option is on.
		Audio ▪ Audio Level: 0~99. ▪ Audio Mode: select Stereo, Left, Right or Mono for soundtracks. ▪ Audio Priority: select the priority of the audio.
		Mode: select from Manual Selection and First Service. First Service means to select the program no. automatically, normally the first program in the TS. Manual Selection means to select the program manually.
	ASI1/2	ASI1/2 Source: CI De-encrypted/TUNER/ASI Input/Mux TS
	SDI	Embedded Audios: On and Off. Closed Caption Mode: select from SMPTE 708, SMPTE 608, Line 21, and Auto. The mode of closed caption needs to be selected based on the video resolution. SMPTE 708 and SMPTE 608 are more suitable for HD video; SMPTE 608 and Line 21 are for SD. When select Auto, the unit will choose SMPTE 608 for HD video, and Line 21 for SD video. Note: Before doing the setup, be sure to enable the Closed Caption switch in the menu Decoder- Video.
	Mux	Mux Switch: On/Off Bit Rate: should be set to a specified value that doesn't exceed the max physical limit of the output medium. For example, to deliver the multiplexed TS to an 8MHz DVB 256QAM modulator, it should not exceed 55000Kb/s, otherwise overflow occurs.

		TS ID: 1~65535 Program List: Select program. Output Bit Rate: Display Output bit rate
	Ethernet	Stream IP Addr: 1.0.0.1~223.255.255.254 Stream Netmask: 1.0.0.1~223.255.255.254 and 0.0.0.0 Stream Gateway: 1.0.0.1~223.255.255.254 and 224.0.0.0~239.255.255.255 Stream Mac address: Display factory-Set Mac addresses Gateway Mac address: Edit Gateway Mac address Multicast IP Addr: Enter the IP address of the Multicast Stream for the transport Stream over IP. Multicast UDP Port: Enter the UDP Port number of the TS over IP stream. Protocol: UDP/RTP TS Pkts Per UDP: 1~7 Time to live: 1~255 Type Of Service: Min Delay/Max Reliability/Max Throughput/Min Monetary Cost/Normal Source: Tuner/ASI input/Mux TS/CI De-encrypted Mode: IPTV/DVB Uni-/Multicast Setup ▪ Max Channels: 1~32 ▪ Channel 0~31 Switch: On/Off. Enable or disable the channel. Multicast IP Address: 224.0.0.0 ~ 239.255.255.255 *(When using Unicast, the Multicast IP Address should be set as the IP address of the receiving device.) Multicast UDP Port: 1~65535 Target MAC Address: Edit Target MAC Address Program List: Select program
	Backup	Main channel: ASI/Tuner. Backup channel: ASI/Tuner. Main CH Unlock Time: set Main CH Unlock Time, ranging from 0 to 59 seconds. When signal of the main channel remains the disconnected status over this value, the unit will switch to the backup channel automatically. Main CH Recover Time: set Main CH Recover Time, ranging from 0 to 59 seconds. When the signal of the main channel recovers and remains stable over this value, the unit will switch back to the main channel.
	Local Setup	IP Address: 1.0.0.1~223.255.255.254 Netmask: 1.0.0.1~223.255.255.254 and 0.0.0.0 Gateway: 1.0.0.1~223.255.255.254 and 224.0.0.0~239.255.255.255 MAC Address: Display MAC Address
	Trap IP Addr	Trap IP Addr
	Unit Name	Unit Name
	Properties	Main Version Linux OS Version ARM S/W Version Decoder Version FPGA Version TS/IP Out NIOS TS/IP Out FPGA
	Factory Setting	Enter: Yes, Exit: No
	Optional Function	External Board Type: 100M Single In/100M Single Out/No Exist Mux Function: Enable/Disable Filter Function: Select from Disable/Filter/Mux.
	HTTP Login	Modify the username and password for the WEB management.

2.2 DMM-140 Series

Main-Menu	Sub-Menu	Description
Inputs	Status	ASI: Display ASI input status TUNER: Display tuner input status IP IN: Display IP input status
	QPSK	LNB Local Oscillator (L.O.) Freq: enter the frequency of the LNB in MHz. Satellite Freq: edit the satellite down link frequency in MHz. The IF frequency will be calculated automatically. Symbol Rate: enter the QPSK symbol rate. LNB Voltage: Off/13 V/18 V LNB 22KHz: On/Off DiSEQC: Port A/Port B/Port C/Port D/DiSEQC OFF
	COFDM	Frequency: enter the proper frequency of the COFDM signal in MHz. Bandwidth: 6/7/8MHz
	QAM	Constellation: 16/32/64/128/256QAM/64B/256B Frequency: enter the frequency of the QAM signal in MHz. Symbol Rate: edit the symbol rate to the proper value in kBaud.
	RSSI	Tuner Status: Display tuner status Strength Display: Display the strength of tuner signal
	Ethernet	Stream IP Addr: 1.0.0.1~223.255.255.254 Stream Netmask: 1.0.0.1~223.255.255.254 and 0.0.0.0 Stream Gateway: 1.0.0.1~223.255.255.254 and 224.0.0.0~239.255.255.255 Stream Mac Address: Display MAC address Multicast IP Addr: Enter the IP address of the multicast stream for the transport stream over IP. Multicast UDP Port: Enter the UDP port number of the TS over IP stream. Protocol: UDP/RTP. Output Smoothing: ▪ Auto: the bit rate is variable. ▪ Disable: the unit let the TS pass by. ▪ Fixed Rate: the bit rate is fixed. TS Bit Rate: 1~38000Kbps. The setting is only valid when the output smoothing is configured as Fixed Rate.
	Status	Decoder: Press <Enter> to enter the alarm status page. CI: Display status for Slot1 and Slot2 Ethernet: Display Ethernet Status
	CI	CI Source: MUX TS/Tuner/ASI Input/IP In Setup: Select TS
	Decoder	Program: Select program Video Standard: Auto/SECAM/NTSC/PAL Screen: Auto/4: 3 Full/16: 9 Full/4: 3 Letterbox. DVB Subtitle Lang: select the language of DVB Subtitle. EBU Subtitle Lang: select the language of EBU Subtitle. Subtitle Priority: choose whether DVB or EBU should be first. Fail Mode: Black Screen/No Sync/Still Picture Close Caption: Select 'OFF' will turn off the caption and select 'ON' will turn on the caption. VBI Mode: Select 'DISABLE' will disable the VBI mode and select 'ENABLE' will enable the VBI mode. Audio: ▪ Audio Level: 0~99. ▪ Audio Mode: Stereo/Left/Right/Mono ▪ Audio Language: select the language of the audio.

		Biss: It includes Biss Mode, Biss 1 Setup and Biss E Setup ▪ Biss Mode: Set Biss mode, can select 'OFF', 'Biss E' or 'Biss 1' ▪ Biss 1 Setup: set Biss 1 (password is required) ▪ Biss E Setup: set Biss E (ID number and password are required)
	ASI	ASI Source: CI De-encrypted/TUNER/ASI Input/Mux TS ASI Package Length: 188/Bypass
	ASI2/SDI	Select from ASI2 and SDI
	Mux	Mux Switch: On/Off Bit Rate: should be set to a specified value that doesn't exceed the max physical limit of the output medium. For example, to deliver the multiplexed TS to an 8MHz DVB 256QAM modulator, it should not exceed 55000Kb/s, otherwise overflow occurs. TS ID: 1~65535 Program List: Select program. Output Bit Rate: Display Output bit rate
	Filter	Filter Switch: On/Off. To activate the filter function, you should turn on this filter functional block in System Menu. Bit Rate: should be set to a specified value that doesn't exceed the max physical limit of the output medium, otherwise overflow occurs. Source: CI De-encrypted/TUNER/ASI Input/IP in Program List: Select program.
	Ethernet	Stream IP Addr: 1.0.0.1~223.255.255.254 Stream Netmask: 1.0.0.1~223.255.255.254 and 0.0.0.0 Stream Gateway: 1.0.0.1~223.255.255.254 and 224.0.0.0~239.255.255.255 Stream Mac Address: Display MAC address Gateway Mac address: Edit Gateway Mac address Multicast IP Addr: Enter the IP address of the Multicast Stream for the transport Stream over IP. Multicast UDP Port: Enter the UDP Port number of the TS over IP stream. Protocol: UDP/RTP TS Pkts Per UDP: 1~7 Time to live: 1~255 Type Of Service: Min Delay/Max Reliability/Max Throughput/Min Monetary Cost/Normal Source: Tuner/ASI input/Mux TS/CI De-encrypted Mode: IPTV/DVB Unicast/Multicast Setup ▪ Max Channels: 1~6 ▪ Channel 0~6 Switch: On/Off. Enable or disable the channel. Multicast IP Address: 224.0.0.0 ~ 239.255.255.255 *(When using Unicast, the Multicast IP Address should be set as the IP address of the receiving device.) Multicast UDP Port: 1~65535 Target MAC Address: Edit Target MAC Address Program List: Select program

Main-Menu	Sub-Menu	Description
System	Local Setup	Stream IP Addr: 1.0.0.1~223.255.255.254 Stream Netmask: 1.0.0.1~223.255.255.254 and 0.0.0.0 Stream Gateway: 1.0.0.1~223.255.255.254 and 224.0.0.0~239.255.255.255 MAC Address: Display MAC Address
	Trap IP Addr	Trap IP Addr: 0.0.0.0~255.255.255.255
	Unit Name	Edit U\unit name
	Properties	Main Version Linux OS Version ARM S/W Version Decoder Version FPGA Version TS/IP Out NIOS TS/IP Out FPGA
	Factory Settings	Enter: Yes, Exit: No
	Optional Function	External Board Type: IP In/IP Out/No Exist
	Machine Type	
	HTTP Login	Modify the username and password for the WEB management.

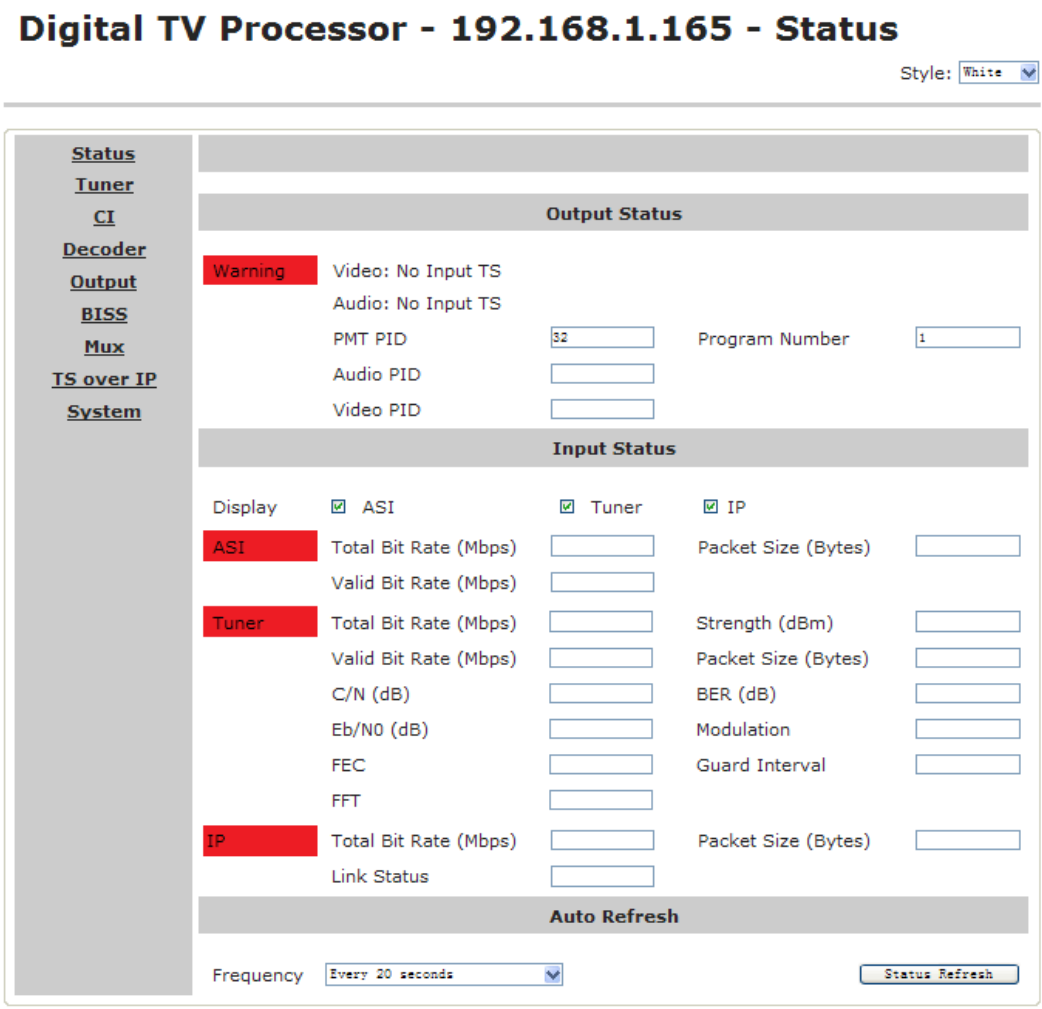
3. Control with web server

To control the unit via Web server, type in the unit IP address in the web browser. Default username and password are as following.

Username: root
Password: 12345

3.1 DMM-150 Decoder Module

3.1.1 Status Menu



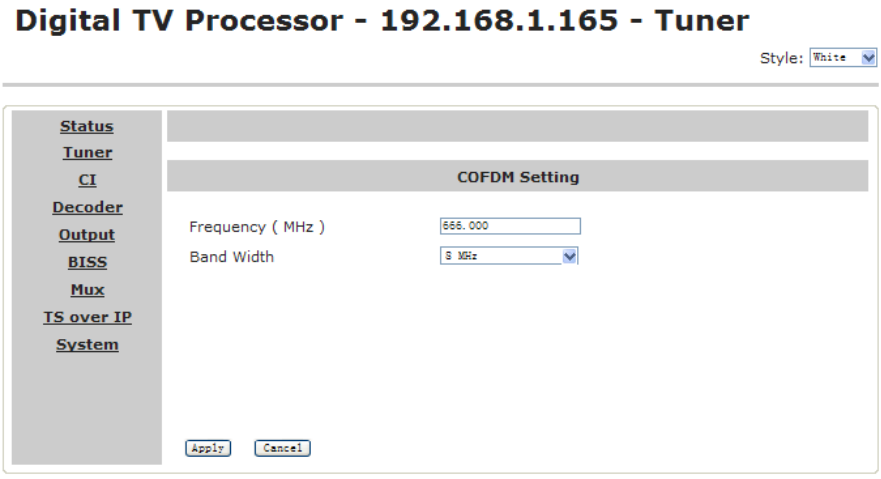
Output Status

Video:	Video status	Audio:	Audio status
PMT PID:	PMT PID Display	Program Number:	Program Number Display
Audio PID:	Audio PID Display	Video PID:	Video PID Display

Input Status

ASI:	ASI input status	Total Bitrate:	Total bitrate of ASI input
Packet size:	ASI input Packet size	Valid Bitrate:	Valid bitrate of ASI input
Tuner:	Tuner input status	Total Bitrate:	Total bitrate of Tuner input
Packet size:	Tuner input Packet size	Valid Bitrate:	valid bitrate of tuner input
Strength:	Tuner input intensity	C/N:	Carrier noise of tuner input
BER:	Bit error rate of tuner input	Eb/N0:	Tuner input quality
Modulation:	Bit error rate of tuner input	FEC:	FEC display
Guard Interval:	Guard Interval display	FFT:	FFT display
IP:	IP input status	Total Bitrate:	Total bitrate of IP input
Packet size:	IP input Packet size	Link Status:	Link Status display

3.1.2 Tuner



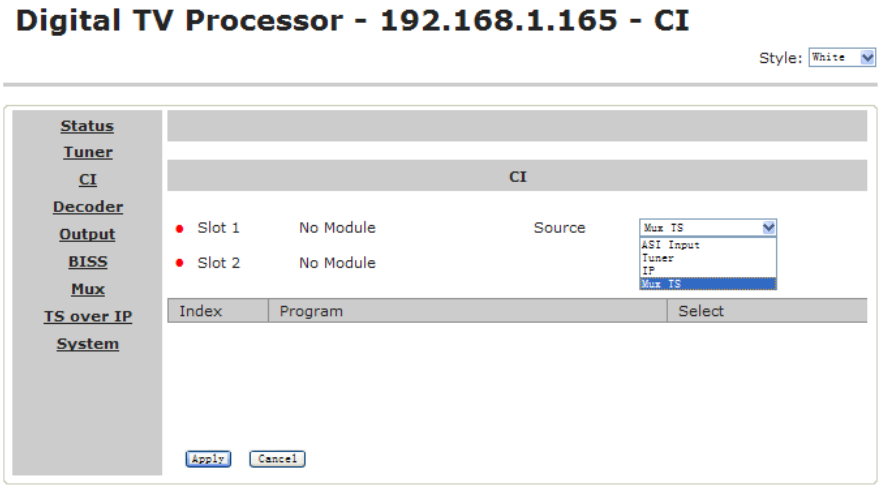
COFDM Setting

Frequency (MHz):	Local channel frequency
Band Width:	select from 6/7/8MHz

QPSK Setting

LNB Freq. (MHz):	LNB Local Oscillator Frequency
SatFreq. (MHz):	Satellite down link frequency
Symbol rate (kBaud):	Set Symbol rate
LNB Voltage:	Select from OFF/13V/18V
LNB 22kHz:	Select from OFF/22K
DiSEqC:	Select from DiSEqC Off, Port A, Port B, Port C, Port D

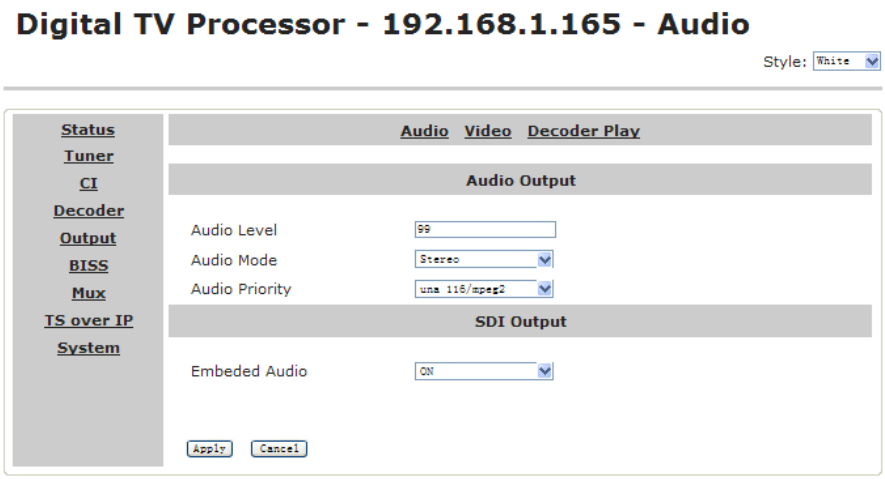
3.1.3 CI



Source: Select from Tuner, ASI Input, IP or MUX TS.
Program column: Show the program name.
Select column: Select the channels which you want to descramble. Free means this channel can be received without CAM; Bypass means to skip this channel, this program will be still scrambled; Slot 1/Slot 2 means to descramble the program by CAM modules in different CI slots.

3.1.4 Decoder

3.1.4.1 Audio



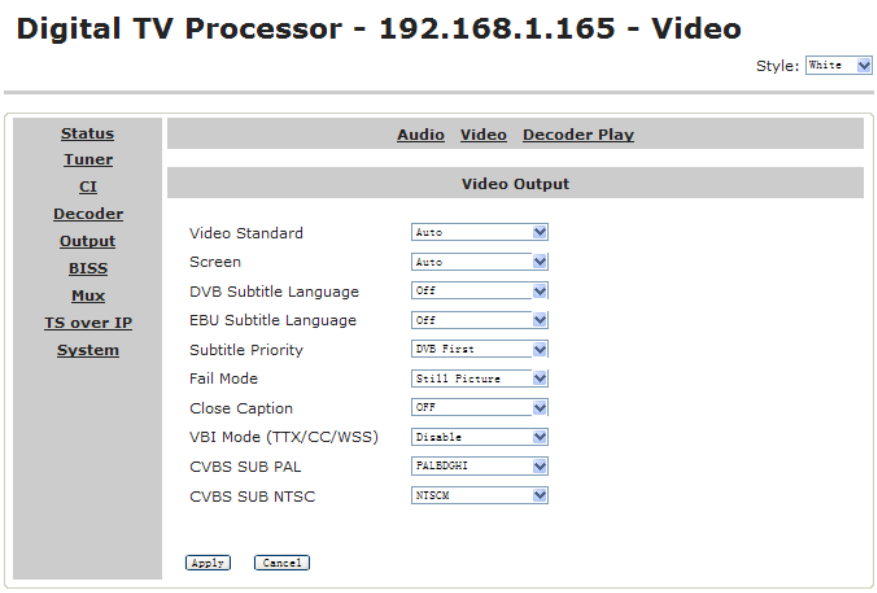
Audio Output

Audio level:	Audio level, ranging from 0-99.
Audio Mode:	Select from Stereo, Left, Right and Mono
Audio language:	Audio language

SDI Output

Embedded Audio:	On/Off.

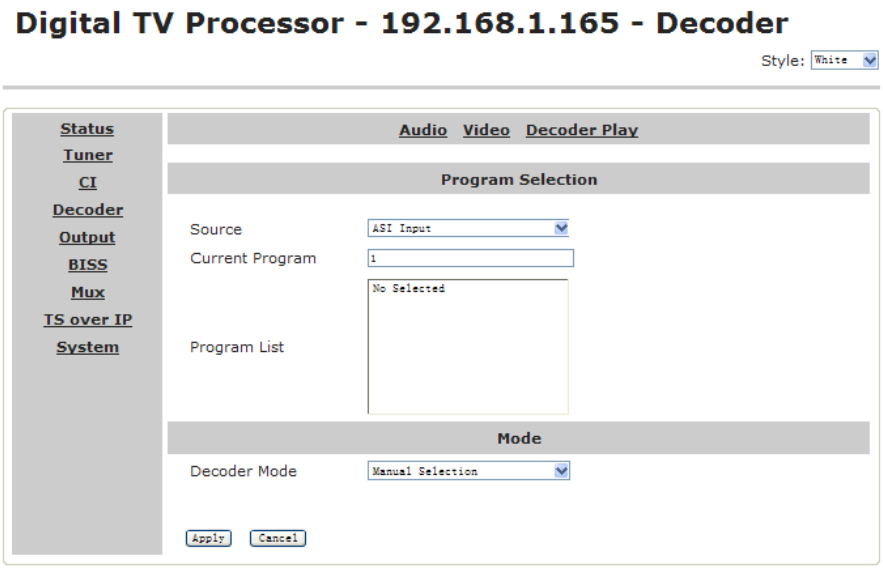
3.1.4.2 Video



Video Output

Video Standard:	Select from Auto/1920x1080i 30/1920x1080i 29.97/1920x1080i 25/1280x720p 60/1280x720p 59.97/1280x720p 50/720x480p 59.94/720x480p 60/720x480p 60/720x576p 50/720x576p 25/
Screen:	Select from Auto, 4:3 Full, 4:3 Letterbox, 16:9 Letterbox or 16:9 Full.
DVB subtitle language:	Choose DVB Subtitle language.
EBU subtitle language:	Choose EBU Subtitle language.
Subtitle Priority:	Select from DVB First or EBU First.
Fail Mode:	Select from Black Screen, No Sync and Still Picture.
VBI Mode:	Off/On. VBI option only controls Closed Caption over CVBS. To activate the CC over CVBS, enable the VBI option.
Close Caption:	Off/On. This switch controls both CC on CVBS and SDI.
CVBS Sub PAL:	select PAL mode, including PAL-B/D/G/H/I, PAL-N, PAL-N_C and SECAM.
CVBS Sub NTSC:	select NTSC Mode, including NTSC-M, NTSC-M_J, NTSC-M_443 and PAL-M.
Note:	the sub-menus VBI Mode, CVBS Sub PAL and CVBS Sub NTSC will only show up when the Closed Caption option is on.

3.1.4.3 Decoder Play



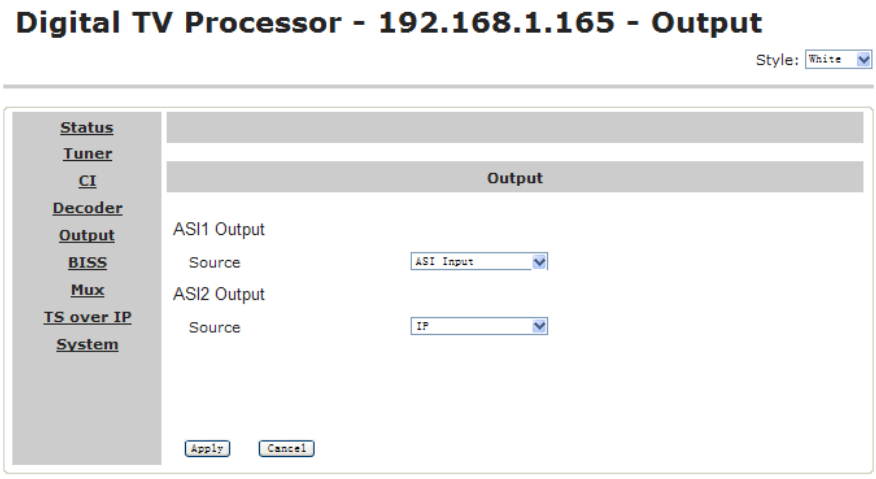
Source: Select from Tuner, ASI Input, IP, MUX TS, CI Descramble or BISS De-encrypted.

Program: Choose the program need to be played

Mode

Decoder Mode: Select from Manual Selection and First Service. First Service means to select the program no automatically, normally the first program in the TS. Manual Selection means to select the program manually.

3.1.5 Output



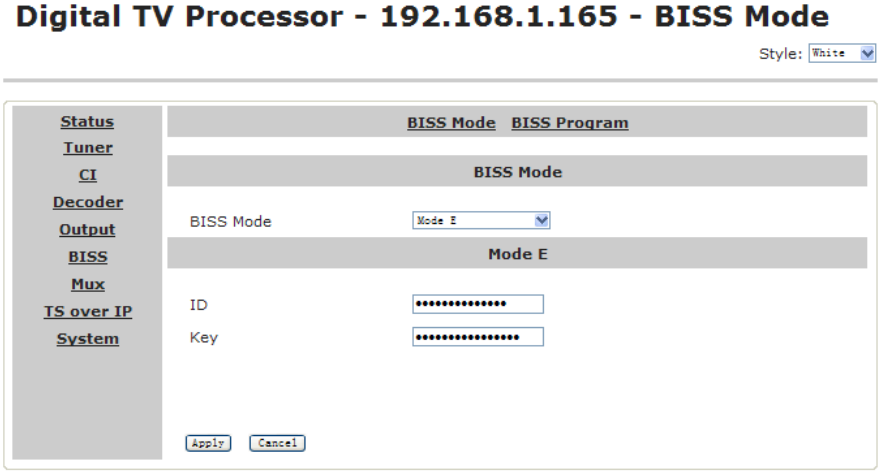
ASI1 Output

Source: Select from Tuner, ASI Input, IP, MUX TS, CI Descramble or BISS De-encrypted.

ASI2 Output

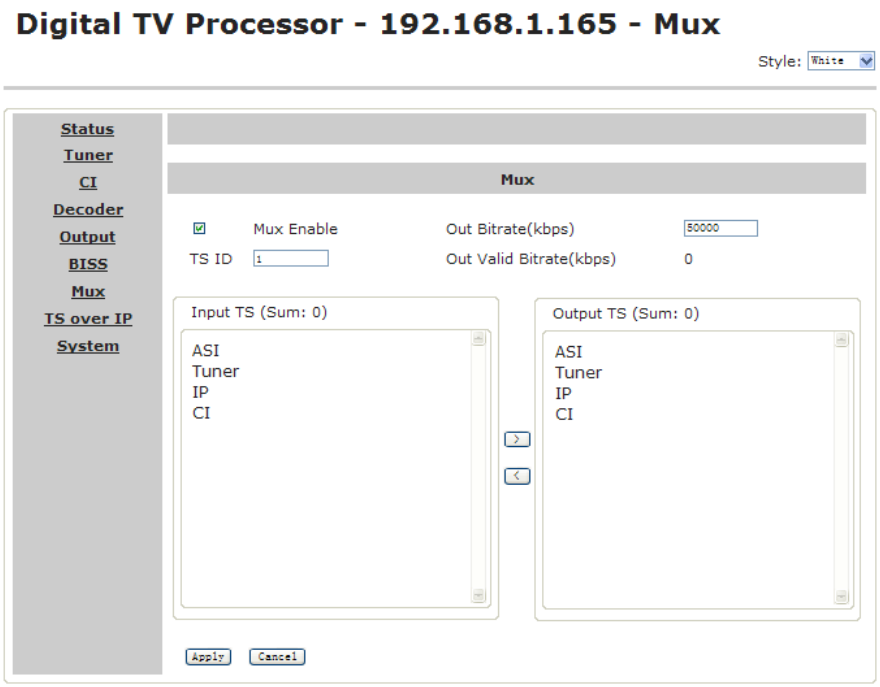
Source: Select from Tuner, ASI Input, IP, MUX TS, CI Descramble or BISS De-encrypted.

3.1.6 BISS



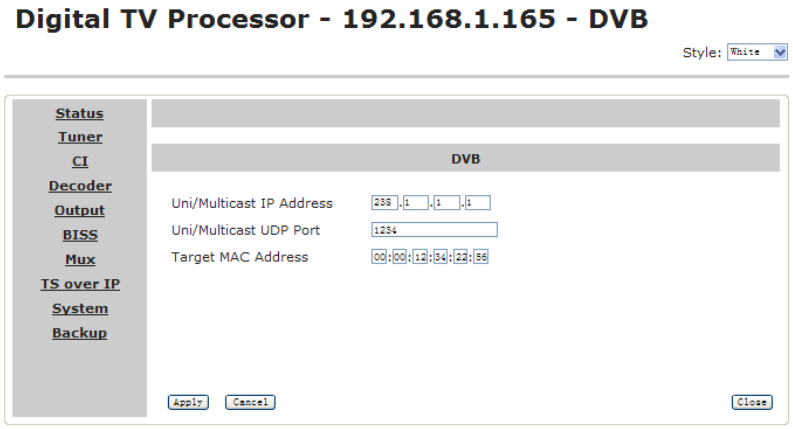
BISS Mode: Select from OFF, Biss E or Biss 1.
Biss 1: Password is required for Biss 1 setup.
Biss E: ID and Key are required for Biss E setup.

3.1.7 MUX



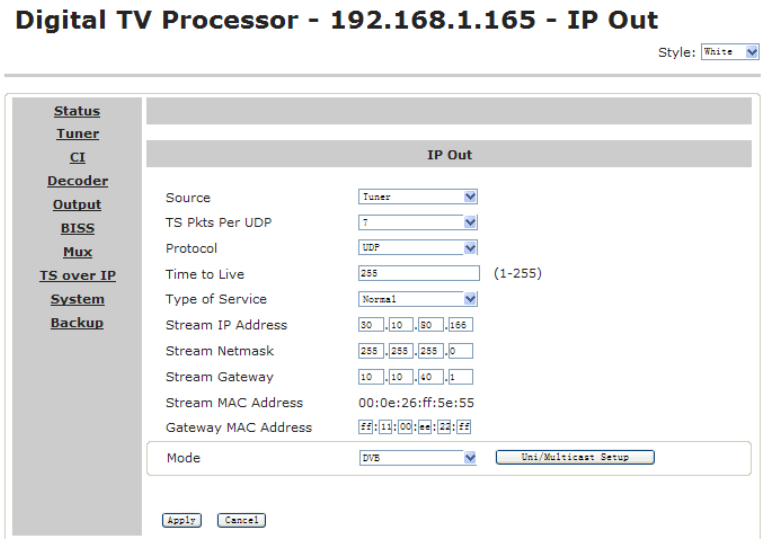
Output Bit rate: Set output bit rate.
TS input: Program list from ASI input. User can click 'Refresh' button to refresh the list.
TS output: Select output program.

3.1.8 IP Out



Source:	TS/IP output signal source, select from: Tuner, ASI, CI Descramble.
TS Pkts Per UDP:	Set how many TS packages will be encapsulated in one UDP package. The valid range goes from 1 to 7.
Protocol:	Select from UDP or RTP.
Time to Live:	Set the number of the routers over which the TS over IP can be transmitted. The valid range goes from 1 to 255.
Service type:	Select from Normal, Min Monetary Cost, Max Reliability, Max Throughput and MiniDelay.
Stream IP Address:	IP address of TS/IP output signal source.
Stream Netmask:	Subnet mask of TS/IP output signal source.
Stream Gateway:	Gateway of TS/IP output signal source.
Stream MAC address:	TS/IP output signal source Mac address.
Gateway Mac Address:	Gateway MAC address.
Mode:	Select from DVB and IPTV output

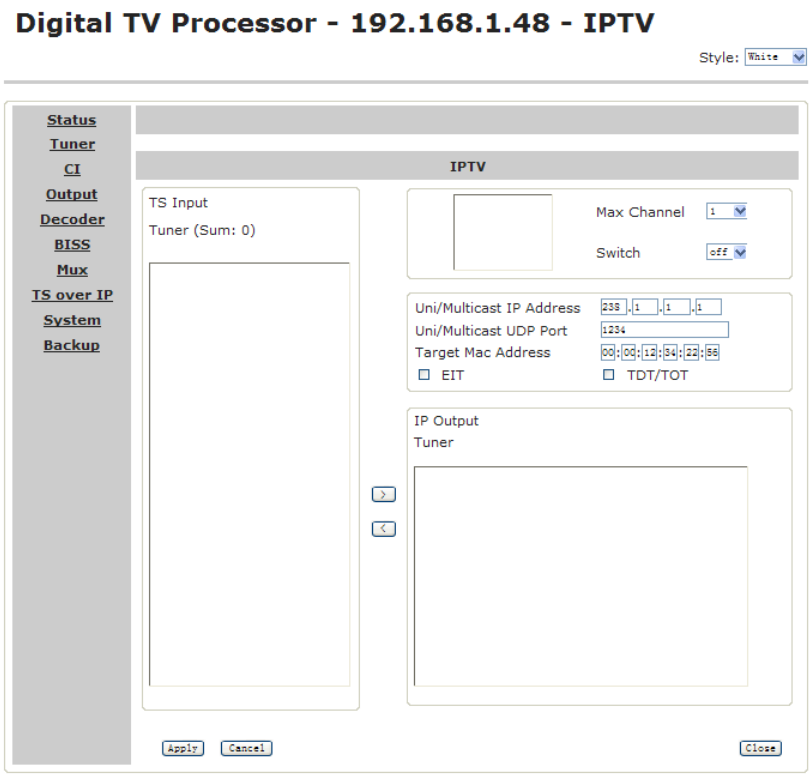
DVB Mode
TS which come from the 'source' selected in previous step will be packed into IP Stream directly. It requires configuring the following parameters.



Multicast/unicast IP:	Multicast or unicast IP address setting.
Target UDP port:	Multicast UDP port number.
Target Mac address:	Set the Mac address of PC at the receiving end in unicast mode.

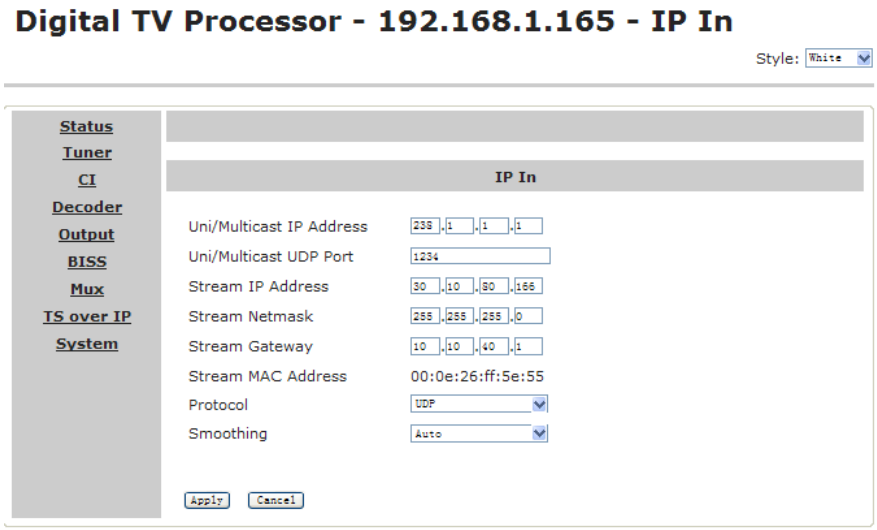
IPTV Mode

TS which come from the 'source' selected in previous step will be de-muxed to several single programs, and each program is packed into one IP stream.



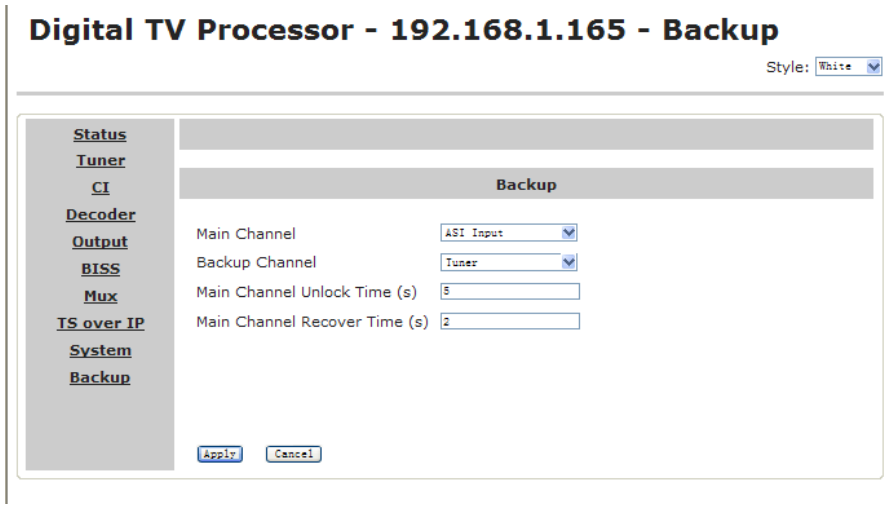
Channel Number:	Select IPTV output channel number ranging from 1~6 (or 1~32).
Channel 0~5 (0~32):	Select IP output channel to be configured.
Enable:	Check this option to enable one channel.
Multicast/unicast IP:	Set multicast or unicast IP address.
Target UDP port:	Set multicast UDP port
Target Mac Address:	In unicast mode, Mac address of the TS reception device
TS input:	Show program list of signal source.
IP output:	Select the output program of each channel.

3.1.9 IP In



Multicast IP:	Multicast IP address.
Multicast UDP port:	Set Multicast UDP port number.
Stream IP address:	IP address of TS/IP signal source.
Protocol:	Network Protocol including UDP or RTP.
Stream Netmask:	Subnet mask of TS/IP signal source.
Smoothing:	Set smoothing mode, including Auto, Fixed rate, Disable.
Stream Gateway:	Gateway of TS/IP signal source.
Stream MAC address:	Mac address of TS/IP signal source.

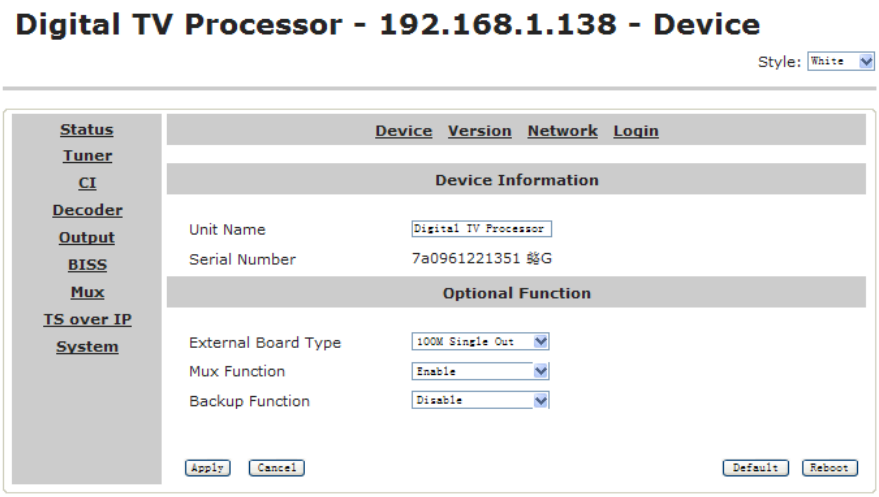
3.1.10 Backup



Main channel:	select main channel from ASI or tuner.
Backup channel:	select backup channel from ASI or tuner.
Main CH Unlock Time:	set Main CH Unlock Time, ranging from 0 to 59 seconds. When signal of the main channel remains the disconnected status over this value, the unit will switch to the backup channel automatically.
Main CH Recover Time:	set Main CH Recover Time, ranging from 0 to 59 seconds. When the signal of the main channel recovers and remains stable over this value, the unit will switch back to the main channel.

3.1.11 System

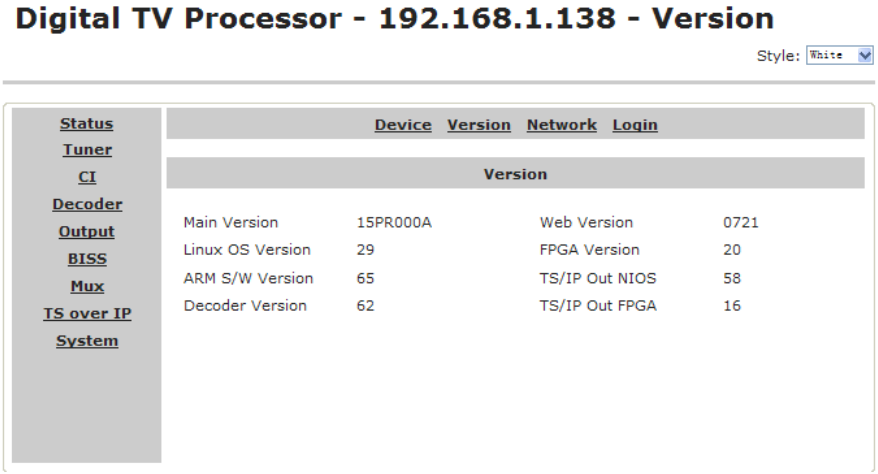
3.1.11.1 Device



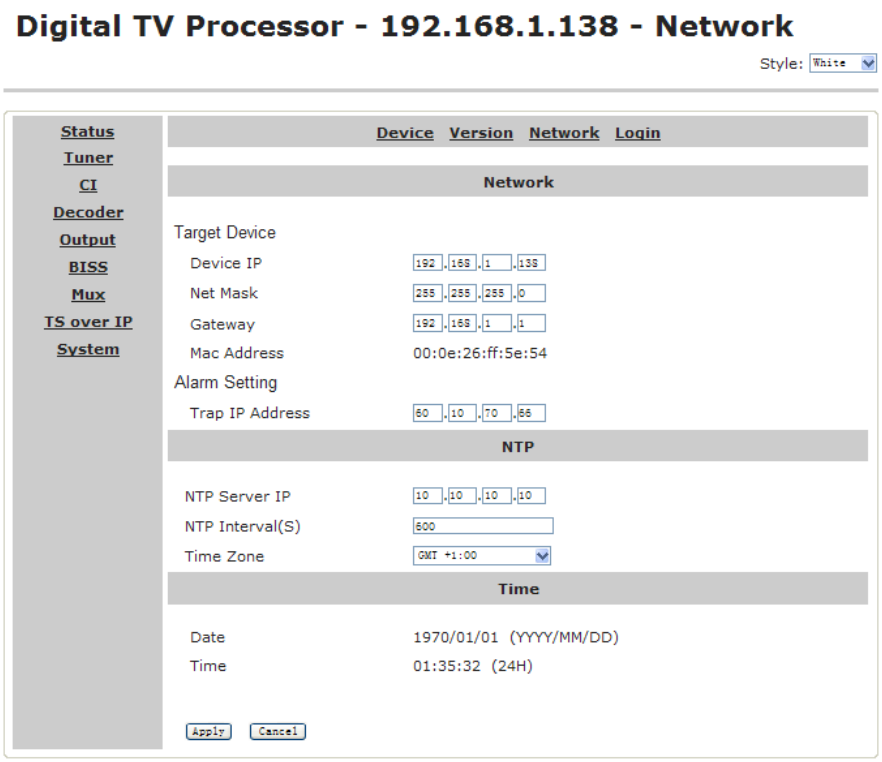
Device Information
Unit Name: User can edit the unit name.
Serial Number: The serial number of the unit.

Optional Function
External Board Type: Select from No Exist/IP out/IP in/QAM out.
Mux Function: Enable/Disable
Filter Function: Select from Disable/Filter/Mux.

3.1.11.2 Version



3.1.11.3 Network



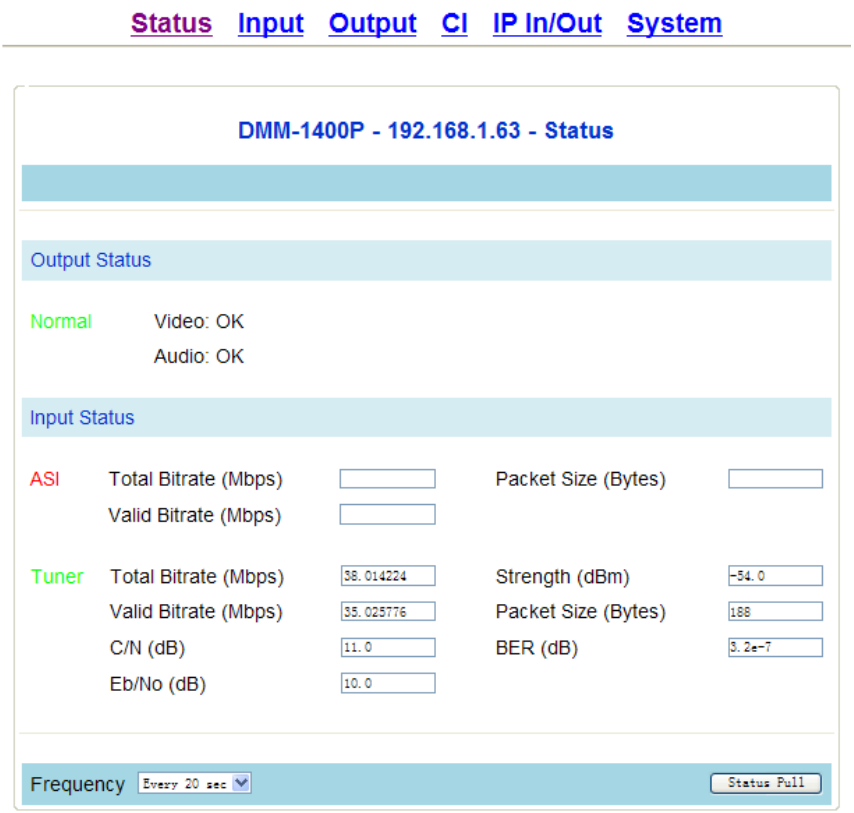
Network
Target device
Device IP: IP address of current device.
Net mask: Network mask
Gateway: Gateway address
MAC Address
Alarm Setting
Trap IP Addr: IP address of SNMP target device.

NTP
NTP Server IP: Edit NTP Server IP.
NTP Interval(s): Edit NTP refreshing interval.
Time Zone: Select time zone.

Time
Date: Display current date.
Time: Display current time.

3.2 DMM-140 Decoder Module

3.2.1 Status Menu



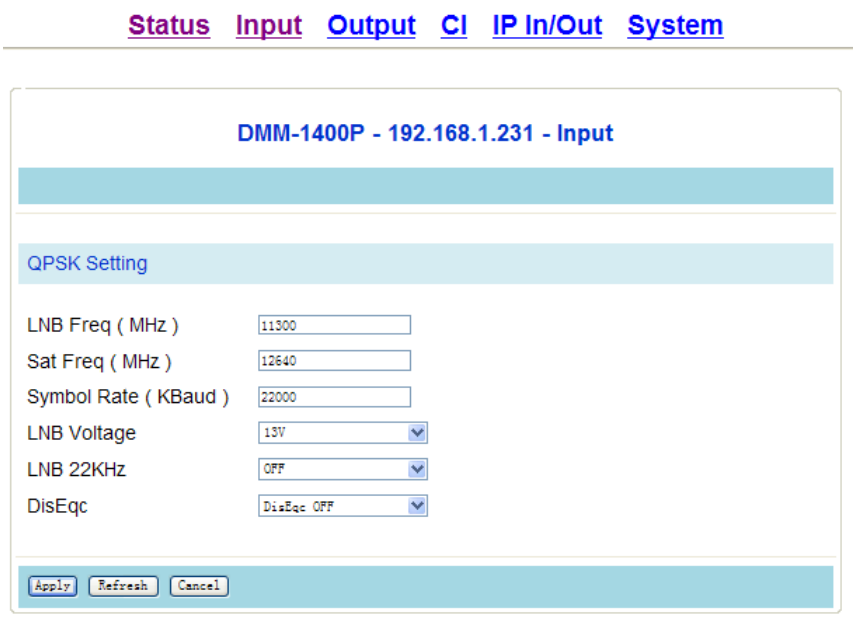
Output Status

Video:	Video status	Audio:	Audio status

Input Status

ASI:	ASI input status	Total Bitrate:	Total bitrate of ASI input
Packet size:	ASI input Packet size	Valid Bitrate:	Valid bitrate of ASI input
Tuner:	Tuner input status	Total Bitrate:	Total bitrate of tuner input
Packet size:	Tuner input Packet size	Valid Bitrate:	valid bitrate of tuner input
Strength:	Tuner input intensity	C/N:	Carrier noise of tuner input
BER:	Bit error rate of tuner input	Eb/No:	Tuner input quality

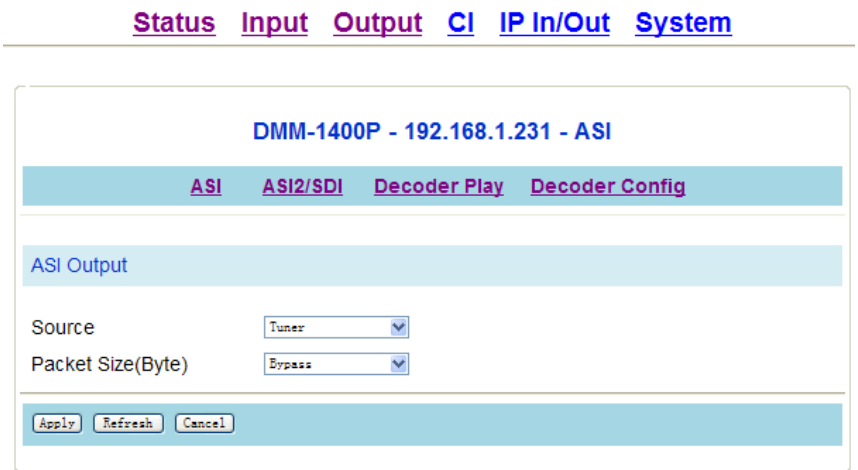
3.2.2 Input Menu



LNB Freq. (MHz):	LNB local oscillator frequency
SatFreq. (MHz):	Satellite down link frequency
Symbol rate (KBaud):	Set Symbol rate
LNB Voltage:	Select from OFF/13V/18V
LNB 22KHz:	Select from OFF/22K
DisEqc:	Select from DisEqc Off, Port A, Port B, Port C, Port D

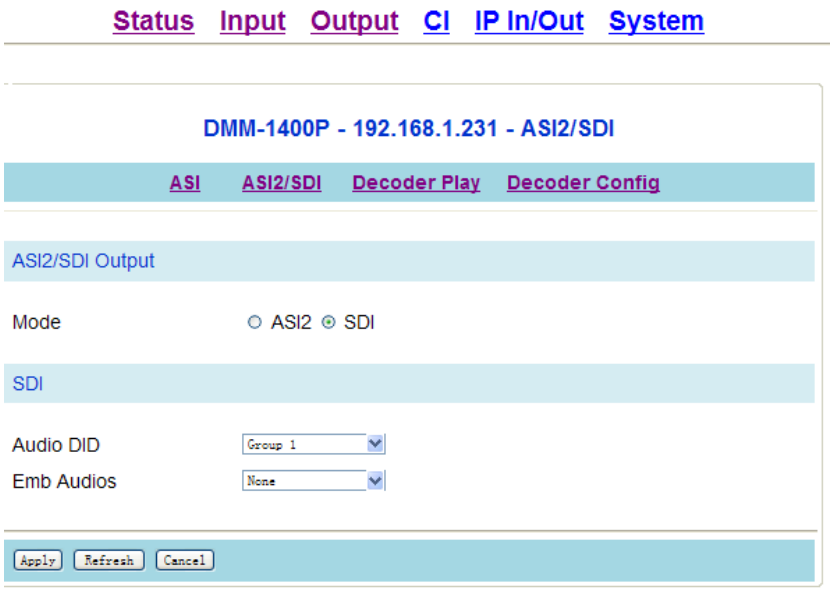
3.2.3 Output Menu

3.2.3.1 ASI Output



Source:	Select from Tuner/ASI/CI scramble
Packet Size (Byte):	Bypass/188

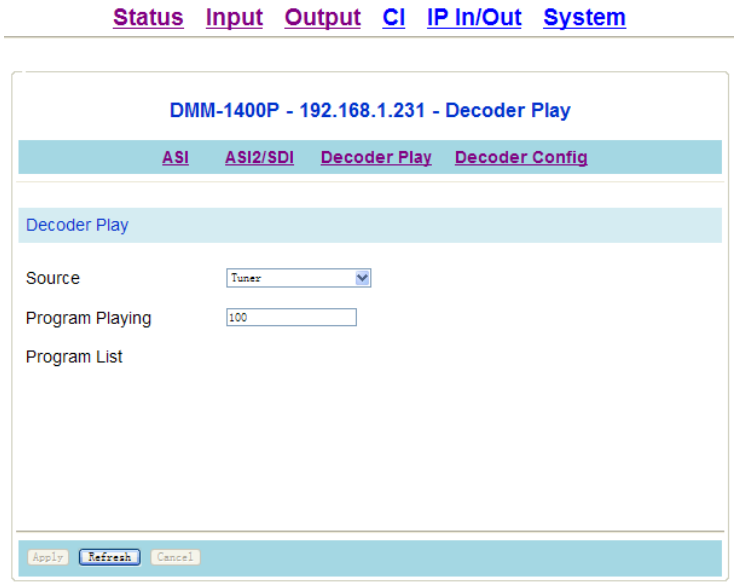
3.2.3.2 ASI2/SDI



ASI2/SDI Output
Mode: Select from ASI2/SDI

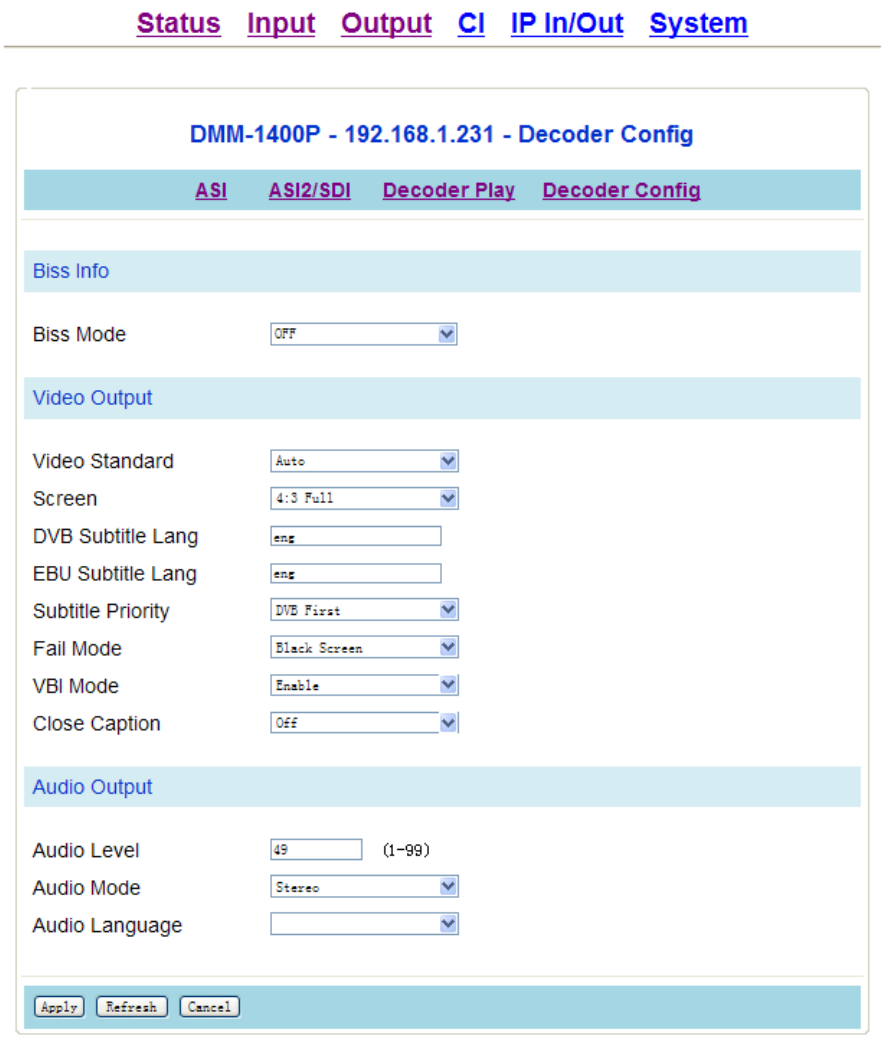
SDI
Audio DID: Select from Group1~4
Emb Audios: Select from None/One/Two/One&Two

3.2.3.3 Decoder Play



Source: Select from Tuner, ASI, CI Descramble, IP
Program: Choose the program need to be played

3.2.3.4 Decoder Config



Biss

Mode:	Select from OFF, Biss E or Biss 1.
Biss 1 Setup:	Password is required for Biss 1 setup.
Biss E Setup:	ID and Password are required for Biss E setup.

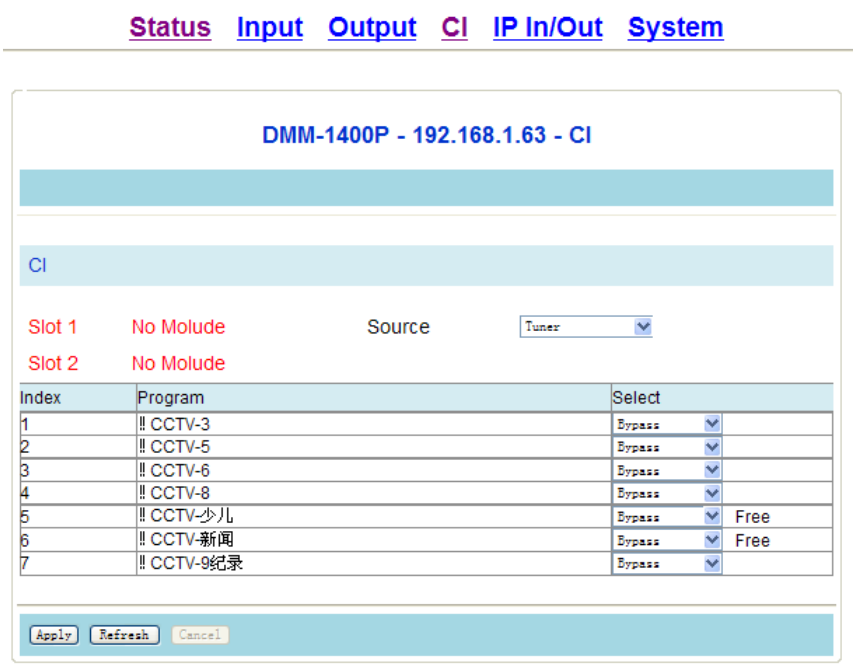
Video Output

Video Standard:	Select from Auto, PAL, NTSC and SECAM.
Screen:	Select from Auto, 4:3 Full, 4:3 Letterbox or 16:9 Full.
DVB subtitle language:	Choose DVB Subtitle language.
EBU subtitle language:	Choose EBU Subtitle language.
Subtitle Priority:	Select from DVB First or EBU First.
Fail Mode:	Select from Black Screen, No Sync and Still Picture.
VBI Mode:	Off/On
Close Caption:	Off/On

Audio Output

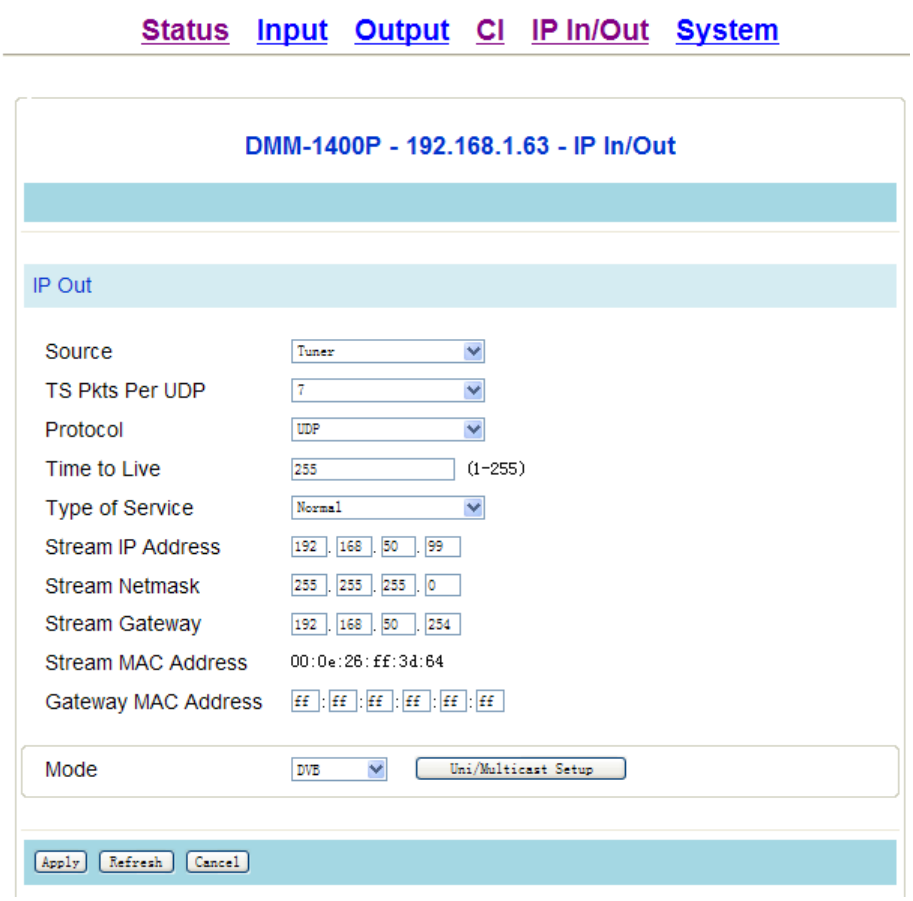
Audio level:	Audio level, ranging from 0-99.
Audio Mode:	Select from Stereo, Left, Right and Mono
Audio language:	Audio language

3.2.4 CI



Source: Select from Tuner or ASI.
Program column: Show the program name.
Select column: Select the channels which you want to descramble. Free means this channel can be received without CAM; Bypass means to skip this channel, this program will be still scrambled; Slot 1/Slot 2 means to descramble the program by CAM modules in different CI slots.

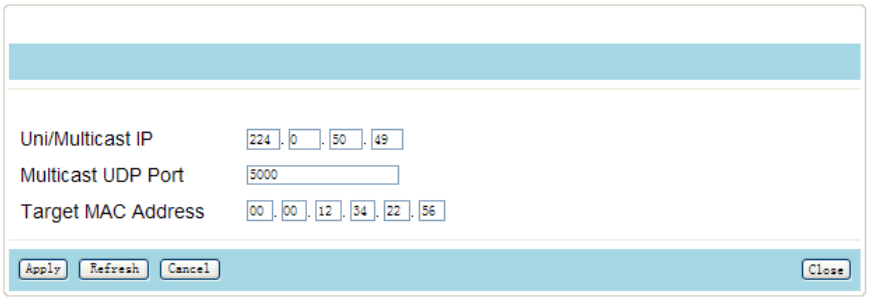
3.2.5 IP Out



Source:	TS/IP output signal source, select from: Tuner, ASI, CI Descramble.
TS Pkts Per UDP:	Set how many TS packages will be encapsulated in one UDP package. The valid range goes from 1 to 7.
Protocol:	Select from UDP or RTP.
Time to Live:	Set the number of the routers over which the TS over IP can be transmitted. The valid range goes from 1 to 255.
Service type:	Select from Normal, Min Monetary Cost, Max Reliability, Max Throughput and Min Delay.
Stream IP Address:	IP address of TS/IP output signal source.
Stream Netmask:	Subnet mask of TS/IP output signal source.
Stream Gateway:	Gateway of TS/IP output signal source.
Stream MAC address:	TS/IP output signal source Mac address.
Gateway Mac Address:	Gateway MAC address.
Mode:	Select from DVB and IPTV output

DVB Mode

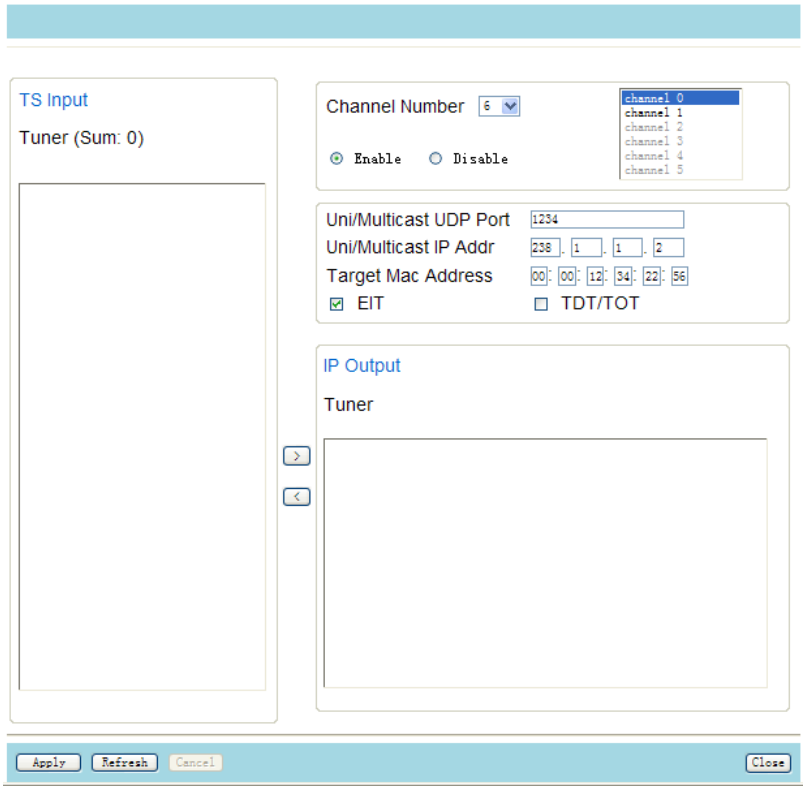
TS which come from the 'source' selected in previous step will be directly packed into IP Stream. It requires configuration of the following parameters.



Multicast/unicast IP:	Multicast or unicast IP address setting.
Target UDP port:	Multicast UDP port number.
Target Mac address:	Set the Mac address of PC at the receiving end in unicast mode.

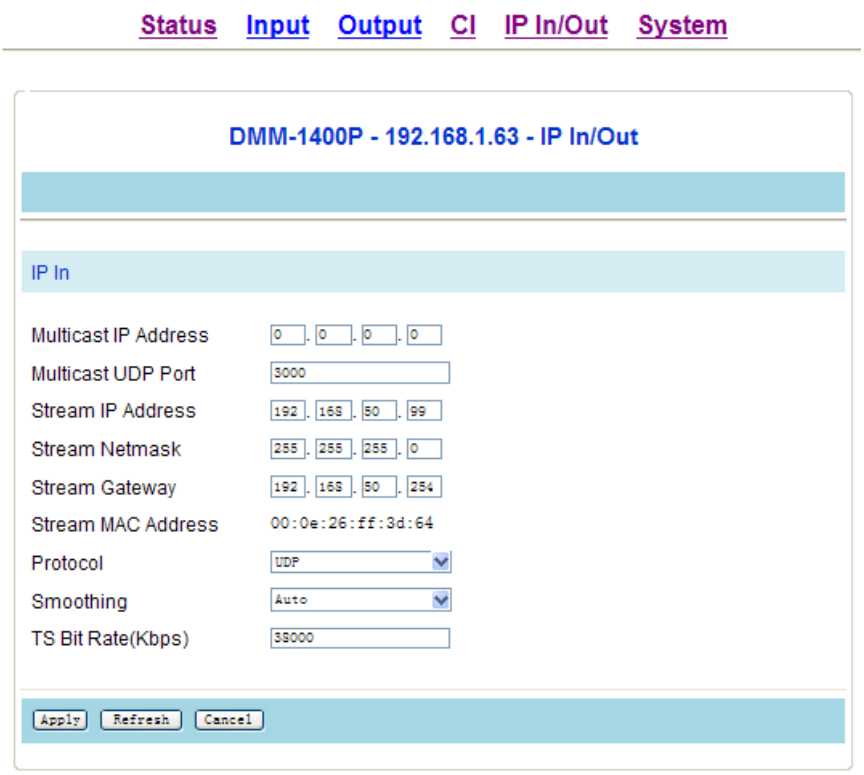
IPTV Mode

TS which comes from the 'source' selected in previous step will be de-muxed to several single programs, and each program is packed into one IP stream.



Channel Number:	Select IPTV output channel number ranging from 1~6 (or 1~32).
Channel 0~5 (0~32):	Select IP output channel to be configured.
Enable:	Check this option to enable one channel.
Multicast/unicast IP:	Set multicast or unicast IP address.
Target UDP port:	Set multicast UDP port
Target Mac Address:	In unicast Mode, Mac address of the TS reception device
TS input:	Show program list of signal source.
IP output:	Select the output program of each channel.

3.2.6 IP In



Multicast IP:	Multicast IP address.
Multicast UDP port:	Set Multicast UDP port number.
Stream IP:	IP address of TS/IP signal source.
Protocol:	Network protocol including UDP or RTP.
Stream Netmask:	Subnet mask of TS/IP signal source.
Smoothing:	Set smoothing mode, including Auto, Fixed rate, Disable.
Stream Gateway:	Gateway of TS/IP signal source.
TS Bit Rate:	Input Bit rate.
Stream MAC address:	Mac address of TS/IP signal source.

3.2.7 System

Status
Input
Output
CI
IP In/Out
System
DMM-1400P - 192.168.1.63 - System
Device Info
Unit Name
DMM-1400P
Serial Number
00000000
Version
Main Version
14PR0017
WEB Version
0103
Linux OS Version
05
ARM S/W Version
37
Decoder Version
61
FPGA Version
44
TS/IP Out NIOS
58
TS/IP Out FPGA
1a
Network
Target Device
IP Address
192 . 168 . 01 . 63
Subnet Mask
255 . 255 . 255 . 0
Gateway
192 . 168 . 01 . 1
Mac Address
00:0e:26:ff:3d:63
Alarm Setting
Trap IP Address
10 . 10 . 70 . 66
Optional Function
External Board Type
IP Out
Filter Function
Disable
Machine Type
Input Type
Auto
Stream MAC Address
00:0e:26:ff:3d:64
Watch Dog Switch
Enable
Apply
Refresh
Cancel
Login
Default
Reboot

Device Info

Unit Name:	User can edit the unit name.
Serial Number:	The serial number of the unit.

Version

Main Version
WEB Version
Linux OS Version
ARM S/W Version
Decoder Version
FPGA Version
TS/IP Out NIOS
TS/IP Out FPGA

Network

Target device

IP Address:	IP address of current device.
Subnet mask:	Network mask
Gateway:	Gateway address

Alarm Setting

Trap IP Addr:	IP address of SNMP target device.

Optional Function

External Board Type:	Select from No Exist/IP out/IP in/QAM out.
Filter Function:	Select from Disable/Filter/Mux.

Machine Type

Input Type:	Select from None/DVB-S/DVB-S2/DVB-T/DVB-C/DS3/auto.
Stream MAC Address:	MAC address of the IP board.
Watch Dog Switch:	Enable/Disable.

4. Technical Specification

4.1 DMM-140 Series

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rates	DVB-S QPSK: 5 ~ 45MS/s; DVB-S2 8PSK 10~31MS/s
Roll-off Factor	DVB-S QPSK: 0.35; DVB-S2 8PSK: 0.35, 0.25, 0.2
FEC Code Rate	DVB-S2 8PSK: 2/3, 3/4, 3/5, 5/6, 8/9, 9/10 DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22kHz selectable
DVB-S Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rates	2 ~ 45MS/s
Roll-off Factor	0.35
Puncture Rates	1/2, 2/3, 3/4, 5/6, 7/8
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22kHz selectable
DVB-C Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency Range	48 ~ 860MHz
Symbol Rates	1 ~ 7MS/s (ITU J.83 Annex A)
Constellation	64/128/256 QAM
Input Level	-15 ~ 15dBmV
Bandwidth	6/7/8MHz
Input Return Loss	7dB (typ.)
DVB-T Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency Range	174 ~ 230MHz (VHF); 470 ~ 860MHz (UHF)
Input Level	-20 ~ -70dBm
Constellation	QPSK, 16-QAM, 64-QAM
Carrier bandwidth	6/7/8 MHz
FTT Mode	2K/8K
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
ASI Input	
Connector	1 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rates	≤ 100Mb/s
Package Length	188 or 204 Bytes
TS over IP	
Connector Type	1 x RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP

TS Processing	
TS Input Management	Remux and demux between Tuner, ASI and TS/IP Inputs
TS Output Management	Remux and demux for 2 mirror ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation
Descrambler	DVB Common Scrambling Algorithm (CSA)
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2 x BNC Female, 75Ω (one connector is shared with SDI output)
Standard	DVB-ASI, EN50083-9
Output Bit Rates	≤ 99Mb/s
Digital Video Processing	
Video Standard	MPEG-2(MP@ML)
SDI Video Resolution	576i x 25, 480i x 29.97
Video Bit Rate	< 80Mb/s
SD-SDI Output	
Connector Type	1 x BNC Female, 75Ω (share with one of the two ASI outputs)
Serial Interface	SMPTE 259M, 270 Mb/s (10bit)
Level	800mV p-p
Audio Embedded	Yes
Digital Audio Processing	
Number of Outputs	1 pair of stereo audio output (1 Audio PID is decoded)
Analog Video Output	
CVBS Connector	1 x 2.5mm phone jack (with phone jack to RCA adaptor)
Video Standard	NTSC, PAL, and SECAM
Analog Audio Output	
Connector Type	1 x 2.5mm phone jack for CVBS and stereo audio
Number of Outputs	1 pair of stereo audio
Control & Monitoring	
Connector Type	1 x RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	Handheld Programmer Unit
Software Upgrade	FTP loader

4.2 DMM-150 Series

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rate	5 ~ 45MS/s for QPSK 10 ~ 31MS/s for 8PSK
Rolling-off Factor	DVB-S QPSK: 0.35 DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured Rates	DVB-S QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarization	0, 13V, 18V selectable
LNB Band Switching Tone	0/22kHz selectable
DiSEqC	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input frequency	48 ~ 860MHz
Input level	45 ~ 75dBuV
Symbol rate	1 ~ 7MS/s (ITU J.83 Annex A)
Constellation	64/128/256QAM
Bandwidth	6/7/8MHz
Input return loss	7dB (typ.)
DVB-T/T2 Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input frequency	104 ~ 862MHz (VHF/UHF)
Input level	-20 ~ -70dBm (Quasi Error Free, QEF)
Constellation	DVB-T: QPSK/16-QAM/64-QAM DVB-T2: QPSK, 16QAM, 64QAM, 256QAM
Bandwidth	6MHz/7MHz/8MHz
FFT mode	DVB-T: 2K/8K DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K
Guard interval	DVB-T: 1/4, 1/8, 1/16, 1/32 DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128
FEC code rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8 DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Input return	7dB (typ.)
ASI Input	
Connector Type	2 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
Input Bit Rates	≤ 100Mb/s
Package Length	188 or 204 Bytes
TS Processing	Re-multiplexing of 2 ASI Inputs
TS over IP	
Connector Type	1 x RJ45, 10/100M for TS/IP
Useful bit rate	70Mb/s for 10/100M
Protocol	UDP / RTP, Multicast / Unicast, IGMPv2, ARP

TS Processing	
TS Input Management	Remux and demux between Tuner, ASI and TS/IP Inputs
TS Output Management	Remux and demux for 2 independent ASI outputs
Service and PID management	Remux, filtering and remapping
PSI/SI	PSI/SI table regeneration, NIT and SDT edition, LCN Edition and regeneration
Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Double PCMCIA slots, compatible with major CA CAMs in the market
ASI Output	
Connector Type	2 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9
TS Processing	2 Independent TS Re-multiplexing from tuner, TS/IP and 2 ASI inputs
HDMI Output	
Standard HDMI	1x HDMI 1.3 interface (partial)
Video Resolution	1080i x 30, 1080i x 29.97, 1080i x 25, 720p x 60, 720p x 59.94, 720p x 50, 480p x 60, 576p x 50, 576i x 25, 480i x 29.97
Embedded	Digital Audio Loop Through
Digital Video Processing	
Video Standard	MPEG-2(MP@ ML for SD, MP@HL for HD) MPEG 4/H.264 Part 10 (MP@L3 for SD, HP@L4.1 for HD)
SDI Video Resolution	1080i x 30, 1080i x 29.97, 1080i x 25, 720p x 60 720p x 59.94, 720p x 50, 576i x 25, 480i x 29.97
Video Bit Rate	< 80Mb/s
SD-SDI Output	
Connector Type	2 x SD-SDI outputs in mirror, BNC Female, 75Ω
Serial Interface	SMPTE 259M, 270 Mb/s (10bit)
Level	800mV p-p
HD-SDI Output	
Connector Type	2 HD-SDI outputs in mirror, BNC Female, 75Ω
Serial Interface	SMPTE 292M, 1.485 Gbit/s (10bit)
Level	800mV p-p
Digital Audio Processing	
Number of Outputs	2 pairs of audio outputs (2 Audio PIDs are decoded)
Analog Video Output	
YPbPr Connector	1 x 2.5mm phone jack, 75Ω (phone jack to RCA adaptor)
CVBS Connector	1 x 2.5mm phone jack, 75Ω (phone jack to RCA adaptor)
Video Standard	NTSC, PAL, and SECAM
YPbPr Resolution	1080i x 30, 1080i x 29.97, 1080i x 25, 720p x 60, 720p x 59.94, 720p x 50, 480p x 60, 576p x 50, 576i x 25, 480i x 29.97
Signal Level	I.0 Vp-p±5%
Frequency Response	< ±I dB at 5.5 MHz
Chroma-Luma Delay	< ±30 ns
Field Time Distortion	< 2%
Line Time Distortion	< 1%
Short Time distortion	< 2%
Differential Gain	< 4%
Differential Phase	< 2°
Signal to Noise Ratio	> 55 dB (luminance weighted)
Analog Audio Output	
Connector type	1 x 2.5mm phone jack, 75Ω (phone jack to RCA adaptor)
Output mode	Left, Right, Dual Mono, Stereo
Number of Outputs	2 pairs of audio outputs (2 Audio PIDs are decoded).

Baseband Data Output	
Subtitle	DVB/EBU
VBI	Teletext, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708
Redundancy	
Redundancy Port	between Tuner, 2 x ASI inputs and TS/IP
Switching Condition	TS Sync Loss
Switching Mode	Main, Spare
Control & Monitoring	
Connector Type	1×RJ45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	Handheld Programmer Unit
Equipment Upgrade	FTP loader

5. FAQ

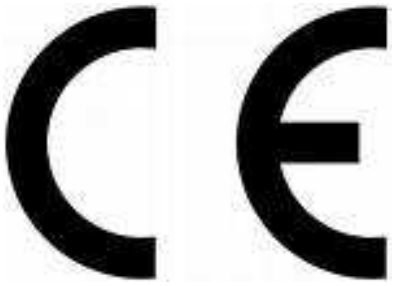
5.1 What is a “good” input signal for satellite reception?

Strength: the range is -25 ~ -65dBm, the more large value is better within this range, like: -30dBm is better than -25dBm

C/N and Eb/N0: the more large value is better, C/N reference value: 9.5dB, Eb/N0 reference value: 6.4dB, could receive a good signal

BER: the lower value is better, BER reference value 0.0E-8 and 0.0E-9, could receive a good signal

6. Statement of Conformity DMM-140-Series



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state that our products, where they bear the CE marking illustrated above, are in conformity with the following standards:

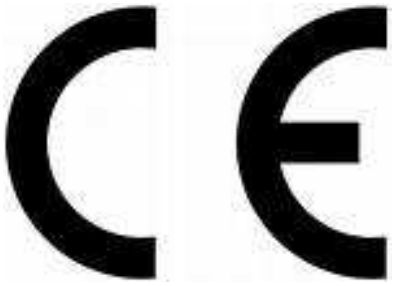
EN 50083-2:2001	Electromagnetic compatibility for equipment – Cabled distribution systems for television and sound signals.
EN 61000-3-2:2006	Electromagnetic compatibility Limits – Limits for harmonic current emissions (equipment input current <= 16 A per phase).
EN 61000-3-3:2008	Electromagnetic compatibility Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection.

This regards to the following Teracue products:
DMM-100-FR
DMM-140-S2
DMM-140-C
DMM-140-T

Designed, developed and manufactured to conform with the:

- Directive EMC 2004/108/EC Electromagnetic Compatibility

7. Statement of Conformity DMM-150-Series



TERACUE

state that our products, where they bear the CE marking illustrated above, are in conformity with the following standards:

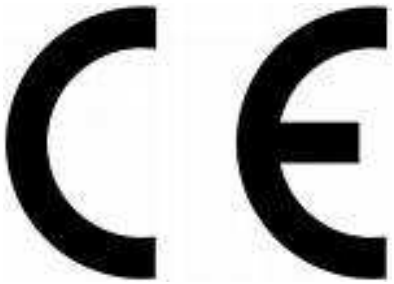
EN 50083-2:2006	Electromagnetic compatibility for equipment – Cabled distribution systems for television and sound signals.
EN 61000-3-2:2006 + A1:2009 + A2:2009	Electromagnetic compatibility Limits – Limits for harmonic current emissions (equipment input current <= 16 A per phase).
EN 61000-3-3:2008	Electromagnetic compatibility Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection.

This regards to the following Teracue products:
DMM-100-FR, DMM-100-FR-1RU
DMM-150-S2, DMM-150-C, DMM-150-T, DMM-150-T2

Designed, developed and manufactured to conform with the:

- Directive EMC 2004/108/EC Electromagnetic Compatibility

8. Statement of Conformity DMM-220-Series



TERACUE

state that our products, where they bear the CE marking illustrated above, are in conformity with the following standards:

EN 50083-2:2006	Electromagnetic compatibility for equipment – Cabled distribution systems for television and sound signals.
EN 61000-3-2:2006 + A1:2009 + A2:2009	Electromagnetic compatibility Limits – Limits for harmonic current emissions (equipment input current <= 16 A per phase).
EN 61000-3-3:2008	Electromagnetic compatibility Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection.

This regards to the following Teracue products:
DMM-100-FR, DMM-100-FR-1RU
DMM-220-S2, DMM-220-T/T2/C

Designed, developed and manufactured to conform with the:

- Directive EMC 2004/108/EC Electromagnetic Compatibility